



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

MEMORANDUM

SUBJECT: Five-Year Review for the Applied Materials Superfund Site, Santa Clara, CA

FROM: Tom Kremer, Superfund Policy Advisor
Site Cleanup Branch

A handwritten signature in black ink, appearing to read "TKremer", is written over the name "Tom Kremer" in the "FROM" field.

THRU: John Kemmerer, Chief
Site Cleanup Branch

TO: Keith Takata, Director
Superfund Division

I. INTRODUCTION

Attached, please find a copy of the second Five-Year Review for the subject Superfund Site prepared by the California Regional Water Quality Control Board, San Francisco Bay Region. EPA has reviewed their Five-Year Review and adopts their recommendations as written. The Board's Five-Year Review is summarized below.

Because contaminant levels will allow for unlimited use and unrestricted exposure upon achieving ROD cleanup goals, this Five-Year Review is not required by CERCLA (Section 121©) or by Section 300.430(f)(4)(ii) of the NCP. However, because cleanup will take five years or more to attain, this Five-Year Review must be conducted as a matter of Agency policy (OSWER Directive 9355.7-02, "Structure and Components of Five-Year Reviews", 5/31/91. This review (Type 1) is applicable to sites at which construction is complete (OSWER Directive 9355.7-02A, "Supplemental Five-Year Review Guidance", 7/26/94.

II. FIVE-YEAR REVIEW SUMMARY

The site is located at 3050 Bowers Avenue in Santa Clara. EPA proposed listing the site on the National Priority List in 1984 and finalized the listing in 1987. Volatile Organic Chemicals were discovered in groundwater at this site in 1983. In 1984, Applied Materials installed a system to pump and treat contaminated groundwater. The system consists of three extraction wells, an extraction pit, and a dual-column air stripper. In 1985, underground storage tanks and some of the surrounding soil were excavated, and an excavation pit was built. In addition, a downgradient extraction well and a second deep monitoring well were installed to determine the extent of contaminant migration. The treated groundwater is discharged to a storm drain which flows into San Tomas Aquino Creek and South San Francisco Bay.

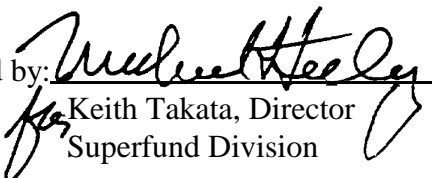
The ROD was signed by EPA in 1990. EPA chose to continue using the pump and treat system installed in 1984 to remove contaminants from the groundwater. Groundwater cleanup standards are based on drinking water standards.

Applied Materials has implemented the required remedial actions. All construction activities have been completed. Ground water systems have been effective in containing the plume and substantially reducing concentrations of contaminants in ground water. Applied Materials, with Regional Board acceptance, temporarily ceased groundwater extraction in July, 1999, and are assessing the effectiveness of Monitored Natural Attenuation as an alternative remedy. A report is anticipated to be provided to the Regional Board in the fall of 2000. The Regional Board will review the report and submit any recommended remedy change to EPA who will amend the ROD if appropriate.

Institutional controls, in the form of deed notice/restrictions, are in effect. No exposure to contaminated groundwater is occurring or expected. Full achievement of cleanup standards remains years away.

III. CONCLUSION

I certify that the remedy selected for this site remains protective of human health and the environment. Based on the expected continuing presence of contamination at this site at levels which preclude unlimited use and unrestricted exposure, the next Five-Year Review will be written by five years from the date of signature of this Review.

Approved by: 
for Keith Takata, Director
Superfund Division

Date: 1/11/00

Attachment: California Regional Water Quality Control Board 5-Year Review



Lawrence Kolb
Executive Officer

California Regional Water Quality Control Board

San Francisco Bay Region

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Gray Davis
Governor

June 5, 2000
File: 2189.8152 (vc)

Keith Takata
U.S. Environmental Protection Agency, Region IX
Superfund Division (SFD-1)
75 Hawthorne Street
San Francisco, CA 94105

**Subject: Five-Year Status and Effectiveness Evaluation Report for Applied Materials,
3050 Bowers Avenue, Santa Clara, California**

Dear Mr. Takata:

Regional Board staff has reviewed the subject five-year status report, dated September 30, 1999. The enclosed summary report describes the current site conditions and provides a summary of the past five years of operation. Soil and groundwater cleanup at this site over the past ten years has dramatically reduced VOC contaminant concentrations to relatively low levels (33 µg/l of 1,1-DCA maximum groundwater concentration). Therefore, the discharger has proposed to evaluate the use of monitored natural attenuation as a cleanup strategy for the residual VOC contamination. With Regional Board approval, the discharger has discontinued groundwater extraction on a trial basis to evaluate the effectiveness of monitored natural attenuation.

Upon EPA approval of the report, the Regional Board may consider updating the Site Cleanup Requirements to reflect the changes in contaminant concentrations and changes in the proposed cleanup strategy.

If you have any questions regarding this letter, please contact Vincent Christian of my staff at (510) 622-2336, or e-mail at vac@rb2.swrcb.ca.gov.

Sincerely,

Lawrence P. Kolb
Acting Executive Officer

Stephen Hill, Chief
Toxics Cleanup Division

cc w/enclosure:

Robert Lucacher, Applied Materials, Inc.
Joyce Adams, Weiss Associates
Rebecca Maddex, Hewlett Packard Company
Tom Kramer, USEPA

California Environmental Protection Agency

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

Five-Year Review (Type I)

**Applied Materials
3050 Bowers Avenue
Santa Clara, California**

I. Introduction

Authority Statement and Purpose. The California Regional Water Quality Control Board, San Francisco Bay Region (Regional Board) conducted this review pursuant to the Multi-Site Cooperative Agreement (MSCA) between EPA Region IX and the Regional Board, CERCLA section 121 (c), NCP section 300.400(f)(4)(ii), and OSWER Directives 9355.7-02 (May 23, 1991) and 9355.7-02 (July 26, 1994). It is a policy review. The purpose of a five-year review is to assure that a remedial action remains protective of public health and the environment and is functioning as designed. This document will become a part of the Site File. This review (Type I) is applicable to a site at which response is ongoing.

Site Characteristics. Volatile Organic Compounds (VOCs) were discovered at this site in 1983. Contaminated soils were excavated and a groundwater extraction and treatment system was installed in 1990. Since then, approximately 253 kg of VOCs have been extracted from groundwater. VOC concentrations at the site are now relatively low. In January 2000, the highest concentrations reported were 14 µg/l for 1,1-DCE, 33 µg/l for 1,1-DCA, and 31 µg/l for 1,1,1-TCA. The maximum concentration limits for drinking water for these chemicals are 6 µg/l, 5 µg/l, and 200 µg/l, respectively.

II. Remedial Objectives

Remedial objectives for soil have been achieved. Remedial objectives for groundwater are based on drinking water standards, and were established in Regional Board site cleanup requirements (Order No. 93-056).

III. ARARs Review

There have been no changes in drinking water standards or hazard-index denominators for any of the constituents of concern since the last five-year review was prepared in September 1994.

IV. Effectiveness Evaluation

Due to the low concentrations, VOC recovery rates from the groundwater extraction system have declined dramatically in recent years. In July 1999, groundwater extraction was discontinued with Regional Board approval to determine if natural attenuation processes would be effective to further reduce contaminant concentrations. Preliminary results indicate that concentrations are stable or have declined since groundwater extraction was terminated. After four quarters of groundwater chemistry data have been collected, the discharger will submit a report to the Regional Board evaluating the effectiveness of monitored natural attenuation at this site.

V. Areas of Noncompliance

The discharger has fully implemented the approved remedial action, consistent with the remedial objectives, and is in compliance.

VI. Recommendations

The discharger is currently performing an investigation to evaluate the effectiveness of monitored natural attenuation at this site, and will submit a report to the Regional Board in the fall of 2000, which will provide the results of the investigation. If monitored natural attenuation is effective, Site Cleanup Requirements should be revised to reflect the current site conditions and the change in cleanup strategy. If monitored natural attenuation is not effective, the discharger should continue to implement the existing cleanup strategy, or propose an alternate strategy.

VII. Statement of Protectiveness

I certify that the remedy selected for this site remains protective of human health and the environment.

VIII. Next Five-Year Review

The next five-year review will be conducted by November 2004.